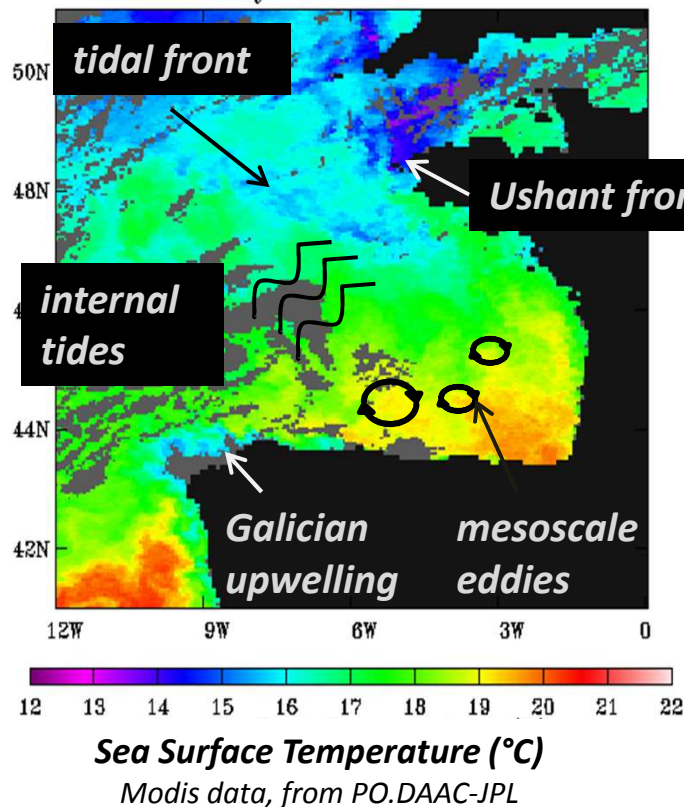


# PREDictability of Short-scale COastal ocean processes in the bay of Biscay (PRESCOB)

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1- Illustrate and discuss the SSH signature of small-scale processes in a dynamically rich coastal region, as well as uncertainties of those signatures in simulations;

2- Set up a coastal ocean data assimilative Ensemble modeling platform available to address science issues and SWOT design choices as discussed within the SDT;

3- Prepare a Pilot Experiment to take place in 2017-18, aimed to be concomitant with an AirSWOT experiment, in collaboration with partners from other institutes  
Main goals = interpret AirSWOT observations there  
+ assess the simulations and DA assimilation runs  
+ assess the predictability of processes identified in 1.

# Specific objectives and approaches

## Objective 1:

Observability of coastal processes by SWOT-like altimetry

Ability of models to represent and predict the surface signature of such processes

- Numerical simulations based on Symphonie (Marsaleix, 2009); several configurations to be tested regarding the grid, forcing, physics (e.g. waves, mixing)
- Stochastic modelling to estimate model uncertainties in SSH and predictive skill

## Objective 2:

Impact studies of SWOT-like data on DA runs (incl. DA methodological and assessment issues)

- Data assimilation platform based on a Local Asynchronous Ensemble Kalman Filter (BELUGA – De Mey, 2008)
- Coastal altimetric dataset (CTOH/LEGOS)

Considered target processes are:

- Gironde river plume: density currents and (sub)mesoscale eddies/meanders
- Circulation over the shelf
- Mesoscale and submesoscale activity over the Landes shelf
- Circulation over the slope (French shelf)
- Internal waves over the slope and shelf
- Atmospheric pressure and wind-induced surge along the French coast

# A contribution to address some phase-A issues

- **Is there a need for a sub-kilometric resolution in the coastal ocean ?**

- numerical high-resolution ( $O(100\text{m})$ ) simulations in identified sub-domains: analysis and interpretation of SSH signals in terms of physical processes
- along-track analysis of high-resolution Jason-1/2 data (XTRACK, CTOH/LEGOS)

- **What is the impact of the data error budget (amplitude + space-time structure) on the scales that can be effectively observed and on those that can be effectively constrained within data assimilation?**

- **How could the fast-repeat cycle be used to complement the remainder of the mission (parametrization, modeling) for the study of the Bay of Biscay physical processes? What supplementary information or equipment (AirSWOT, moorings, tide gauges, SST, etc.) will be required to accomplish the goals of the fast repeat oceanographic phase?**

- **Issues related to data post-processing (e.g. filtering)**

(post Phase A issues)

- impact studies on the observability of physical processes and on assimilation runs